

## Patent Abstracts of Japan

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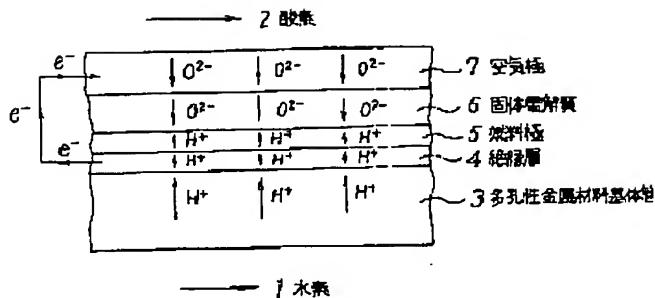
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 APPLICATION NUMBER : 04187699

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TITLE : SOLID ELECTROLYTE ELECTROLYTIC CELL



ABSTRACT : PURPOSE: To prevent the breakage of a substrate pipe due to thermal stress, prevent the leakage of the electricity flowing between electrodes to the substrate pipe, and improve the reliability of an electrolytic cell by forming the substrate pipe with a porous metal material arranged with an insulating layer on the fuel electrode side.

CONSTITUTION: A substrate pipe 3 is made of a Ni-Cr heat-resistant alloy having the porosity of about 30%, and an insulating layer 4 made of  $\text{Al}_2\text{O}_3$  having the porosity of 20-30%, a fuel electrode 5 made of  $\text{NiO}$  having the porosity of 20-30%, a solid electrolyte 6 made of dense yttria-stabilized  $\text{ZrO}_2$  having the porosity of 12%, and an air electrode 7 made of  $\text{LaCoO}_3$  having the porosity of 20-30% are formed on it in sequence by flame spraying. Since the substrate pipe 3 is made of a metal material having high heat conductivity, the temperature difference between the inner and outer faces is rarely generated at the time of power generation and flame spray, and its breakage due to thermal stress can be prevented because it is not fragile like a ceramic material. The electricity flowing from the fuel electrode 5 to the air electrode 7 is prevented from leaking through the substrate pipe 3 by the insulating layer 4.

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